



APPLIES TO ACADEMIC YEAR 2016/2017

## DRE 7008 Advanced Statistics

### Programme

Finance; Economics

### Responsible for the course

Genaro Sucarrat

### Department

Department of Economics

### Term

According to study plan

### ECTS Credits

6

### Language of instruction

English

### Introduction

The aim of the course is to equip the students with a formal understanding of the statistical foundations of econometrics at a level expected among Ph.D students in economics, finance and related disciplines.

### Learning outcome

After taking this course, students should have a solid knowledge of the foundations of theoretical and applied econometrics, so that they can critically use and evaluate others' use of statistical techniques in economics and related fields. Moreover, students will be introduced to the use of advanced programming languages.

### Prerequisites

Admission to a PhD Programme is a general requirement for participation in PhD courses at BI Norwegian Business School.

External candidates are kindly asked to attach confirmation of admission to a PhD programme when signing up for a course with the doctoral administration. Candidates can be allowed to sit in on courses by approval of the course leader. Sitting in on courses does not permit registration for courses, handing in exams or gaining credits for the course. Course certificates or confirmation letters will not be issued for sitting in on courses.

### Compulsory reading

#### Books:

Bierens, Herman J. 2004. Introduction to the Mathematical and Statistical Foundations of Econometrics. Cambridge University Press  
Hayashi, Fumio. 2000. Econometrics. Princeton University Press

#### Articles:

During the course there may be hand-outs and other material on additional topics relevant for the course and the examination

### Recommended reading

#### Books:

Davidson, James. 2000. Econometric theory. Blackwell  
Davidson, Russell, James G. MacKinnon. 1993. Estimation and inference in econometrics. Oxford University Press  
Grimmett, Geoffrey R. and David R. Stirzaker. 2001. Probability and random processes. 3rd edition. Oxford University Press  
Jacod, Jean and Philip Protter. 2003. Probability Essentials. 2nd edition. Springer

### Course outline

1. Probability and Random Variables
2. Expectation and Conditional Expectation
3. Estimation
4. Hypothesis Testing
5. Computomg and Numerical Optimisation

## 6. Model Selection

### **Computer-based tools**

The course uses the statistical programming language R.

### **Learning process and workload**

The course will be taught in ten modules, each consisting of three hours. Students are expected to participate in class and hand in solutions to exercises and problems.

Lectures	30 hours
Specified learning activities (including reading)	75 hours
Autonomous student learning (including exam preparation)	75 hours
Total	180 hours

### **Examination**

Individual termpaper.

The final grade is pass/fail.

### **Examination code(s)**

DRE 70081 individual termpaper accounts for 100% of the grade in the course DRE 7008.

### **Examination support materials**

N/A

### **Re-sit examination**

Re-takes are only possible at the next time a course will be held. When the course evaluation has a separate exam code for each part of the evaluation it is possible to retake parts of the evaluation. Otherwise, the whole course must be re-evaluated when a student wants to retake an exam.

### **Additional information**

Academic honesty and trust are important to all of us as individuals, and represent values that are encouraged and promoted by the honour code system. This is a most significant university tradition. Students are responsible for familiarizing themselves with the ideals of the honour code system, to which the faculty are also deeply committed.

Any violation of the honour code will be dealt with in accordance with BI's procedures for cheating. These issues are a serious matter to everyone associated with the programs at BI and are at the heart of the honour code and academic integrity. If you have any questions about your responsibilities under the honour code, please ask.